

# Module and Pathway Test Report

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**Module:** FBSDK Downloads, July 2011

**Pathway(s):** Estimate containment resources (IFT-contain)

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## General Testing Procedures

All modules implemented in IFTDSS undergo two types of testing:

- **Scientific testing** to ensure that the outputs produced by the module are consistent with a range of expected values generated by the native desktop software application and/or provided by the scientific model developer(s). These tests include comparisons for a range of predefined scenarios developed to exercise different parts of the module.
- **Software testing** to ensure that the module is functioning from a usability perspective, accepting inputs, and producing outputs without generating software error reports. These automatic tests also ensure that as updates are made to the models or modeling framework, each individual module produces correct data values.

This document describes Sonoma Technology, Inc.’s test cases.

## Scientific Testing

### Estimate Containment Resources Test Case

This test case compared the Estimate Containment Resources module in IFTDSS to the desktop version of BehavePlus 5.0.5 using three simulations to test for data ranges commonly observed by users and to allow the comparison of a variety of results. A total of eight output parameters were compared.

#### Inputs and Results File Name

- Estimate containment resources test case results (included in the IFTDSS online help under **IFTDSS Compared with Other Systems > Module Test Cases**)
- [Estimate containment resources test case summary](#) (Appendix)

**Passed/Fail:** Passed

**Issues:** None identified

**Special Note:** The Estimate Containment Resources module implemented in IFTDSS does not support the input of multiple suppression resources for a fire (a simulation) at this time.

## References

Documentation of BehavePlus operation and application:  
<http://www.firemodels.org/index.php/national-systems/behaveplus>

# Appendix: Scientific Test Case for the IFTDSS “Estimate Containment Resources Module” as Implemented in BehavePlus

## Summary of Findings

The Estimate Containment Resources Module as implemented in IFTDSS is a scientifically sound representation of the desktop version of BehavePlus 5.0.5. In this test case, the outputs from IFTDSS and desktop BehavePlus matched with negligible rounding/truncating differences.

## Methods

### Estimate Containment Resources Test Case

This test case compared the Estimate Containment Resources module in IFTDSS to the desktop version of BehavePlus 5.0.5 using three simulations (Table 1) to test for data ranges commonly observed by users and to allow the comparison of a variety of results.

Table 1. Input data used for the Estimate Containment Resources module test case.

Input Parameter	Unit	Simulation 1	Simulation 2	Simulation 3
Surface Rate of Spread (maximum)	chains/hour	5	100	300
Fire Size at Report	acres	2	25	50
Length-to-Width Ratio	chains/chains	1	3	5
Suppression Tactic		Head	Rear	Head
Line Construction Offset	chains	1	10	30
Resource Line Production Rate	chains/hour	25	15	40
Resource Arrival Time	hours	1	0.5	0.5
Resource Duration	hours	8	16	20
Resource Base Cost	dollar	1,000.00	2,000.00	10,000.00
Resource Hourly Cost	dollar/hour	500.00	1,000.00	5,000.00

## Results

### Estimate Containment Resources Test Case

Results from the Estimate Containment Resources module implemented in IFTDSS and desktop BehavePlus for the three simulations tested matched with negligible rounding/truncating differences (Table 2).

Table 2. Results from the Estimate Containment Resources module comparison.

Output Parameter	Unit	Simulation 1		Simulation 2		Simulation 3	
		IFTDSS	Behave Plus	IFTDSS	Behave Plus	IFTDSS	Behave Plus
Fire Area at Initial Attack	acres	17.78	17.8	177.64	177.6	679.26	679.3
Perimeter at Initial Attack	chains	47.27	47.3	183.47	183.5	436.74	436.7
Contain Status		Contained	Contained	Withdrawn	Withdrawn	Escaped	Escaped
Time from Report	hours	6.01	6	16.49	16.5	0.5	0.5
Contained Area	acres	120.84	120.8	0	-1	0	-1
Fireline Constructed	chains	129.17	129.2	256.29	256.3	0	0
Number of Resources Used		1	1	1	1	0	0
Cost of Resources Used	dollars	3,507.01	3,507	17,987.50	17,987	0	0